



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2022; 8(4): 145-147
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www.oraljournal.com
Received: 01-08-2022
Accepted: 05-09-2022

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Prevalence of dental ankylosis in primary molar

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DOI: <https://doi.org/10.22271/oral.2022.v8.i4c.1637>

Abstract

Background: To evaluate the prevalence of dental ankylosis in primary molar.

Materials & Methods: A total of 50 primary molars were enrolled. The age of patients was 6 to 10 years. 18 were girls and 10 were boys. Radiographic examination was done. The diagnosis was informed by the presence of different degrees of infraocclusion and the appearance of adjacent bone (The loss of periodontal space). The ankylosed tooth was compared with the corresponding molar in the opposite quadrant. Data was collected and result was analysed using chi-squared test and SPSS software.

Results: A total of 50 primary molars were enrolled. According to location, ankylosed teeth were more in the lower jaw as 90% as compared to the upper jaw i.e 10%. The third quadrant has the more number of ankylosed tooth i.e 56% followed by fourth quadrant i.e 34%.

Conclusion: The prevalence of dental ankylosis was higher in the third quadrant, especially in the first primary molars.

Keywords: Dental ankylosis, primary molar, prevalence

Introduction

Tooth ankylosis is the fusion of cementum with the alveolar bone. It can be caused by genetic predisposition, local metabolic changes, dental trauma, or replantation of avulsed teeth [1, 2]. Ankylosis should be visible radiographically as an interruption in the periodontal membrane space [3]. Clinically, it can be diagnosed by typical metallic sounds upon percussion, lack of tooth mobility, dental infraocclusion, and inability of orthodontic movement [4].

The cause of ankylosis is not known although in some cases trauma, infection, disturbed local metabolism or a genetic influence has been considered as an important etiologic factor. These influences have been discussed by Henderson who has also emphasized that a patient having one or two ankylosed teeth is very likely to have other teeth ankylosed over a period of time [5]. This condition is usually treated by surgical removal of the ankylosed teeth so as to prevent the development of malocclusion, local periodontal disturbances, or dental caries [6].

The frequency of ankylosed teeth has been reported to be between 1.3% and 38.5% [7]. The mandibular first primary molars are the most frequently affected teeth, followed by second mandibular and maxillary primary molars. The exact cause of teeth ankylosis is still unknown, but several theories have been proposed such as familial pattern, traumatic injury to Hertwig's epithelial root sheath, deficiency in bone growth, a problem in local metabolism and inflammation, localized infection, and chemical or thermal irritations [8]. Ankylosis is classified as slight, moderate, or severe according to the place of the occlusal level of the infraoccluded tooth. If the infraocclusion is less than 2 mm, it shows slight ankylosis, while moderate submergence shows the occlusal surface of the ankylosed tooth to the contact area. Severe ankylosis shows infraocclusion below the contact area of the adjacent teeth [9]. Diagnosing ankylosed teeth is not difficult and is usually based on clinical signs and radiographic findings. Clinically, ankylosed teeth have a sharp, solid sound on a percussion test in comparison to a cushion sound in normal teeth [10]. Hence, this study was conducted to evaluate the prevalence of dental ankylosis in primary molar.

Materials & Methods

A total of 50 primary molars were enrolled. The age of patients was 6 to 10 years. 18 were girls and 10 were boys. Radiographic examination was done.

The diagnosis was informed by the presence of different degrees of infraocclusion and the appearance of adjacent bone (the loss of periodontal space). The ankylosed tooth was compared with the corresponding molar in the opposite quadrant. Data was collected and result was analysed using chi- squared test and SPSS software.

Table 1: Ankylosed tooth and location

Location	2 nd quadrant	3 rd quadrant	4 th quadrant	Upper jaw	Lower jaw
Number of molars	5	28	17	5	45
Percentage %	10	56	34	10	90

Table 2: Ankylosis and each primary molar

Primary molar	64	74	75	84	85
Number of cases	5	15	13	9	8
Percentage %	10	30	26	18	16

According to the cases of ankylosis on each primary molar, the majority of the cases were of the tooth number 74 *i.e* 30% and of 75 is 26%. Ankylosed molars as 64 were 10% and in fourth quadrant as 84, 85 were 18% and 16% respectively.

Discussion

A conservative treatment approach for ankylosed primary teeth is the continuous supervision of tooth eruption evidenced with periodic radiographic observation of normal root resorption [11, 12]. A tooth that is definitely ankylosed may surprisingly undergo root resorption at a given time and be normally shed. Hence, this study was conducted to evaluate the prevalence of ankylosis in primary molars.

In the present study, a total of 50 primary molars were enrolled. According to location, ankylosed teeth were more in the lower jaw as 90% as compared to the upper jaw *i.e* 10%. The third quadrant has the more number of ankylosed tooth *i.e* 56% followed by fourth quadrant *i.e* 34%. A study by Esian D *et al.* showed that the highest percentage of cases with ankylosis was found in the first group (six to nine years old), respectively, with 72% of cases compared with the second group (ten to twelve years old) with 28% of cases. Of the two primary molars, the most affected by ankylosis was the first molar in quadrant three, followed by the second molar, and finally the first molar in quadrant four. Based on the data obtained, it was concluded that ankylosis is a dental condition which occurs in children in early mixed dentition, especially in the lower arch, with the first primary molar being the most affected tooth [13].

In the present study, according to the cases of ankylosis on each primary molar, the majority of the cases were of the tooth number 74 *i.e* 30% and of 75 is 26%. Ankylosed molars as 64 were 10% and in fourth quadrant as 84, 85 were 18% and 16% respectively. Another study by Krakowiak FJ *et al.* The prevalence of ankylosis of primary molars was found to be 3.7% of the sample subjects. Eighty-two of the 2234 children examined exhibited ankylosis. The prevalence of ankylosis among the black children in the sample was much lower (0.93%) than that of the white children (4.10%). The mandibular first primary molar was ankylosed at an earlier age and more frequently than any other tooth. The frequency of ankylosis of the second primary molar increased in older children. The high incidence of ankylosed primary teeth was seen in children between seven and eleven years of age. Treatment should be based on the evaluation of growth potential jeopardized by the condition. Early extraction and subsequent space management, especially in the younger patient, is recommended [14].

Results

A total of 50 primary molars were enrolled. According to location, ankylosed teeth were more in the lower jaw as 90% as compared to the upper jaw *i.e* 10%. The third quadrant has the more number of ankylosed tooth *i.e* 56% followed by fourth quadrant *i.e* 34%.

Ankylosis of primary molars almost always causes infraocclusion compared to the adjacent teeth because the ankylosed tooth becomes immobile, which is related to the eruption changes that occur with growth [15]. The degree of infraocclusion depends mainly on the stage of occlusal development at the time when ankylosis occurs, causing negative effects such as loss of space or the onset of carious lesions due to difficult oral hygiene conditions [16].

Another study by Parisay I *et al.* showed that Ankylosis is a condition frequently associated with primary molars, wherein the ankylosed primary teeth remain in a fixed position, while the adjacent teeth continue to erupt, moving occlusally. A case report, a five-year-old boy, who had a retained and submerged left lower second primary molar, was presented. Luxation of ankylosed primary molar was considered as a treatment approach. After four months, the tooth erupted to the occlusal level, and there was evidence of further development of a permanent successor in radiographic evaluation. After one year, tooth mobility, bone formation, and development of a permanent successor were in good condition [17].

Conclusion

The prevalence of dental ankylosis was higher in the third quadrant, especially in the first primary molars.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Basheer A, Maroofa, Mansha. Prevalence of dental ankylosis in primary molar. *International Journal of Applied Dental Sciences*. 2022;8(4): 145-147.

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